US-PAT-NO: 6355791
DOCUMENT-IDENTIFIER: US 6355791 B1

TITLE: Polynucleotide separations on polymeric separation media

DATE-ISSUED: March 12, 2002

US-CL-CURRENT: 536/25.4; 210/635 ; 526/347

APPL-NO: 09/ 562069

DATE FILED: May 1, 2000

PARENT-CASE:

This application is a continuation-in-part application U.S. patent application Ser. No. 09/183,123 filed Oct. 30, 1998 (now U.S. Pat. No. 6,066,258), which is a continuation-in-part of U.S. patent application Ser. No. 09/058,580 filed Apr. 10, 1998 (now abandoned, which claims benefit of Ser. No. 60/089,615 filed Jun. 17, 1998, and is a continuation-in-part of U.S. patent application Ser. No. 08/748,376 filed Nov. 13, 1996 (now U.S. Pat. No. 5,772,889), which applications are hereby incorporated by reference in their entirety, which claims benefit of Ser. No. 60/006,477 filed Nov. 13, 1995.

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Detailed Description Text - DETX:

The molded polymeric rod of the present invention is prepared by bulk free radical polymerization within the confines of a chromatographic column. The base polymer of the rod can be produced from a variety of

polymerizable
monomers. For example, the monolithic rod can be made from polymers, including
mono- and di-vinyl substituted aromatic compounds such as styrene, substituted
styrenes, alpha-substituted **styrenes and divinylbenzene**; acrylates and
methacrylates; polyolefins such as polypropylene and polyethylene; polyesters;
polyurethanes; polyamides; polycarbonates; and substituted polymers including
fluorosubstituted ethylenes commonly known under the trademark TEFLON. The
base polymer can also be mixtures of polymers, non-limiting examples of which
include poly(glycidyl methacrylate-co-ethylene dimethacrylate),
poly(**styrene-divinylbenzene**) and
poly(ethylvinylbenzene-divinylbenzene). The
rod can be unsubstituted or substituted with a substitutent such as a
hydrocarbon alkyl or an aryl group. The alkyl group optionally has 1 to
1,000,000 carbons inclusive in a straight or branched chain, and includes
straight chained, branch chained, cyclic, saturated, unsaturated nonionic
functional groups of various types including aldehyde, ketone, ester, ether,
alkyl groups, and the like, and the aryl groups includes as monocyclic,
bicyclic, and tricyclic aromatic hydrocarbon groups including phenyl, naphthyl,
and the like. In a preferred embodiment, the alkyl group has 1-24 carbons. In
a more preferred embodiment, the alkyl group has 1-8 carbons. The substitution
can also contain hydroxy, cyano, nitro groups, or the like which are considered
to be non-polar, reverse phase functional groups. Methods for hydrocarbon
substitution are conventional and well-known in the art and are not an aspect
of this invention. The preparation of polymeric **monoliths** is by conventional
methods well known in the art as described in the following references: Wang et
al. (J. Chromatog. A 699:230 (1994)), Petro et al. (Ana.

Chem. 68:315
(1996)), and the following U.S. Pat. Nos. 5,334,310; 5,453,185; 5,522,994
(to Frechet). **Monolith** or rod columns are commercially available from Merck &
Co (Darmstadt, Germany).

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functional groups of various types including aldehyde, ketone, ester, ether,
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